

CLAIMS

1. A method for producing an SOI wafer by the hydrogen ion delamination method comprising at least a step of bonding a base wafer and a bond wafer having a micro bubble layer formed by gas ion implantation and a step of delaminating a wafer having an SOI layer at the micro bubble layer as a border, wherein, after the delamination step, the wafer having an SOI layer is subjected to a two-stage heat treatment in an atmosphere containing hydrogen or argon utilizing a rapid heating/rapid cooling apparatus and a batch processing type furnace.
2. The method for producing an SOI wafer according to Claim 1, wherein the two-stage heat treatment is performed by subjecting the wafers to a heat treatment in the rapid heating/rapid cooling apparatus and then a heat treatment in the batch processing type furnace.
3. A method for producing an SOI wafer by the hydrogen ion delamination method comprising at least a step of bonding a base wafer and a bond wafer having a micro bubble layer formed by gas ion implantation and a step of delaminating a wafer

having an SOI layer at the micro bubble layer as a border, wherein an FZ wafer, an epitaxial wafer or a CZ wafer of which COPs at least on surface are reduced is used as the bond wafer, and the wafer having an SOI layer is subjected to a heat treatment under an atmosphere containing hydrogen or argon in a batch processing type furnace after the delamination step.

4. A method for producing an SOI wafer by the hydrogen ion delamination method comprising at least a step of bonding a base wafer and a bond wafer having a micro bubble layer formed by gas ion implantation and a step of delaminating a wafer having an SOI layer at the micro bubble layer as a border, wherein a CZ wafer produced from a single crystal ingot of which COPs are reduced for the whole crystal is used as the bond wafer.

5. The method for producing an SOI wafer according to Claim 4, wherein the wafer having an SOI layer is subjected to a heat treatment under an atmosphere containing hydrogen or argon in a batch processing type furnace after the delamination step.

6. An SOI wafer produced by the method according to any one of Claims 1-3 and 5, which has an RMS

value of 0.5 nm or less concerning surface
roughness for both of 1 μm square and 10 μm square.

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0.5 nm or less concerning surface roughness for both of 1 μm square and 10 μm square.